HAWAIIAN SUGAR MANUAL 1993-1994

HSPA Hawaiian Sugar Planters' Association

HAWAIIAN SUGAR MANUAL 1993-1994

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HAWAIIAN SUGAR COMPANIES

(Listed according to principal owners)

A&B-HAWAII, INC.

HAWAIIAN COMMERCIAL & SUGAR CO.
P.O. Box 266
Puunene, HI 96784
Phone: 877-0081

McBRYDE SUGAR CO., LTD.
P.O. Box 8
Eleele, HI 96705
Phone: 335-5333

AMFAC/JMB HAWAII, INC.

KEKAHA SUGAR CO., LTD.
P.O. Box 549
Kekaha, HI 96752
Phone: 337-1472

THE LIHUE PLANTATION CO., LTD.
2970 Kele St.
Lihue, HI 96766-1803
Phone: 245-7325

OAHU SUGAR CO., LTD.
P.O. Box 0
Waipahu, HI 96797
Phone: 677-3577

PIONEER MILL CO., LTD.
P.O. Box 727
Lahaina, HI 96761
Phone: 661-0592

C. BREWER AND CO., LTD.

HILO COAST PROCESSING CO.[a]
D. B. Cataluna, Pres. & C.E.O.
P.O. Box 18
Pepeekeo, HI 96783
Phone: 964-5511

KA'U AGRIBUSINESS CO., INC.
P.O. Box 130
Pahala, HI 96777
Phone: 928-8311

MAUNA KEA AGRIBUSINESS CO., INC.[b]
P.O. Box 68
Papaikou, HI 96781
Phone: 964-1011

DOLE FOOD CO. INC.

WAIALUA SUGAR CO., INC.
P.O. Box 665
Waialua, HI 96791-0665
Phone: 637-6284

HAMAKUA SUGAR CO., INC.

P.O. Box 250
Paauilo, HI 96776
Phone: 776-1511

GAY & ROBINSON, INC.[c]

P.O. Box 88
Makaweli, HI 96769
Phone: 338-1012

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[a]Sugarcane milling company cooperatively owned by United Cane Planters' Cooperative and Mauna Kea Agribusiness Co., Inc.

[b]Mauna Kea Agribusiness Co., Inc., is a grower that delivers its cane to Hilo Coast Processing Co.

[c]Gay & Robinson purchased the assets of Olokele Sugar Co. on April 11, 1994.

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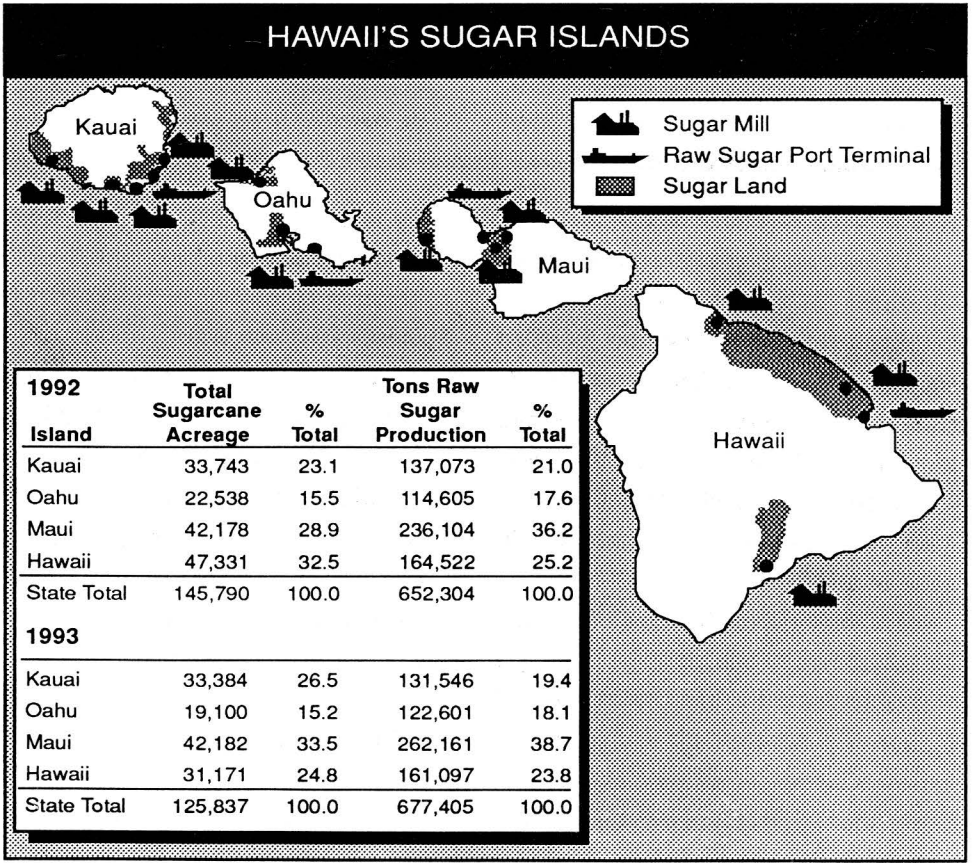
SUGAR IN HAWAII

Hawaii's sugar industry in 1994 observed its 159th year of commercial raw cane sugar production. Sugar production, more than any other activity, helped create Hawaii as it is today.

The first successful plantation was started at Koloa, Kauai in 1835. Its first harvest in 1837 produced 2 tons of raw sugar, which sold for $200. Other pioneers, predominantly from the United States, soon began growing sugarcane on the islands of Hawaii, Maui, and Oahu.

Early sugar planters shared many problems—shortages of water and labor, trade barriers, and the lack of markets for their sugar. Together with Hawaii's isolated oceanic location, these problems created a spirit of cooperation among the planters that continues today.

Between 1852 and the end of World War II, labor shortages were eased by bringing in contract workers from Europe, North America, and Asia. Of the nearly 385,000 workers that came, many thousands stayed to become a part of



1992 Island	Total Sugarcane Acreage	% Total	Tons Raw Sugar Production	% Total
Kauai	33,743	23.1	137,073	21.0
Oahu	22,538	15.5	114,605	17.6
Maui	42,178	28.9	236,104	36.2
Hawaii	47,331	32.5	164,522	25.2
State Total	145,790	100.0	652,304	100.0
1993				
Kauai	33,384	26.5	131,546	19.4
Oahu	19,100	15.2	122,601	18.1
Maui	42,182	33.5	262,161	38.7
Hawaii	31,171	24.8	161,097	23.8
State Total	125,837	100.0	677,405	100.0

FACTS & FIGURES

- Sugarcane is a "monoculture" in Hawaii. Some fields have been in continuous production for more than 150 years.
- Sugar is Hawaii's largest tangible export product.
- Hawaii is one of the few sugar areas in the world where the crop age averages two years at the time of harvest.
- The Hawaii yields of sugar are among the highest in the world, about 10.5 tons an acre in 1993 (5.3 tons on annual basis).
- About 87,000 acres of Hawaii's 126,000 acres of sugarcane land are irrigated. About 75,000 acres are installed with drip irrigation, which allows for more efficient use of water.
- The sugar industry irrigates cane fields with water collected from surface and subsurface sources delivered through a complex network of ditches and tunnels. Its irrigation systems include about 115 fresh and brackish wells and 247 reservoirs with a total capacity of 10.3 billion gallons, as well as 11 hydroelectric installations, 350 miles of major ditches, and 120 miles of tunnels.
- Replacement of the industry's irrigation systems—all of which were built without any government subsidy—would cost more than $1.25 billion.
- The sugar industry creates 10,000 direct and indirect jobs in Hawaii.
- Since 1980, exports of Hawaiian raw sugar have brought $5 billion in new money into the state.
- Hawaii's sugar field workers have the highest standard of living of any agricultural workers in the world.
- Principal products of Hawaii's sugar industry are raw sugar, molasses, and electricity (primarily from biomass fuel).
- Hawaii's sugar industry generates more than 7 percent of the electricity produced in Hawaii.

Hawaii's unique ethnic mix.

Pioneer sugar planters solved water shortages in dry, leeward fields by building irrigation systems that included aqueducts (the first in 1856), artesian wells (the first in 1879), and tunnels and mountain wells (the first in 1898). These irrigation systems enabled the planters to grow sugarcane on more than 100,000 acres of arid land.

The major trade barrier to Hawaii's closest and major market for its raw sugar was eliminated by the 1876 Treaty of Reciprocity between the United States and the Kingdom of Hawaii. Through the treaty, the U.S. received a coaling station and Hawaii's sugar planters, duty-free entry into U.S. markets for their sugar. This market was solidified with the U.S. annexation of Hawaii in 1898 after the Spanish-American War.

From 2 tons of sugar in 1837, sugar production had reached only 13,000 tons by 1876. But the reciprocity treaty and annexation changed this dramatically. By 1898, production had grown to 225,000 tons and reached one million tons by 1932. Until the mid-1980s, annual cane sugar production in Hawaii averaged one million tons.

Because Hawaii has few natural resources, most essentials must be imported—food, fuel, machinery, building materials, etc. Thus, activities

HAWAIIAN SUGAR COMPANIES PRODUCTION FOR 1992
(Raw Value)

Company	Total Caneland Acreage	Acres Harvested	Production (short tons)	Tons Sugar Per Harvested Acre
A&B-HAWAII, INC.				
Hawaiian Commercial & Sugar Co. (Maui)	35,883	15,715	193,388	12.31
McBryde Sugar Co., Ltd. (Kauai)	6,890	3,365	22,935	6.82
Total A&B	**42,773**	**19,080**	**216,323**	**11.34**[a]
AMFAC/JMB HAWAII, INC. (Amfac)				
Kekaha Sugar Co., Ltd. (Kauai)	8,229	3,167	36,523	11.53
The Lihue Plantation Co., Ltd. (Kauai)	11,163	4,859	34,710	7.14
Oahu Sugar Co., Ltd. (Oahu)	10,658	4,406	59,347	13.47
Pioneer Mill Co., Ltd. (Maui)	6,295	3,261	42,716	13.10
Total Amfac	**36,345**	**15,693**	**173,296**	**10.80**[a]
C. BREWER AND CO., LTD. (Brewer)				
Ka'u Agribusiness Co., Inc. (Hawaii)	12,455	4,214	47,284	11.22
Mauna Kea Agribusiness Co., Inc. (Hawaii)	11,158	5,266	42,116[b]	8.00
Olokele Sugar Co., Ltd. (Kauai)	4,714	2,131	25,627	12.03
Total Brewer	**28,327**	**11,611**	**115,027**	**9.91**[a]
DOLE FOOD CO. INC.				
Waialua Sugar Co., Inc. (Oahu)	11,880	4,884	55,258	11.31
HAMAKUA SUGAR CO., INC. (Hawaii)	23,118	9,164	72,287	7.89
GAY & ROBINSON, INC. (Kauai)	2,747	1,301	17,278[c]	13.28
HILO COAST PROCESSING CO. (Hawaii)			[d]	
UNITED CANE PLANTERS' COOPERATIVE (20 member growers, Hawaii)	600	390	2,835[b]	7.26
TOTAL ALL COMPANIES	**145,790**	**62,123**	**652,304**	**10.50**

[a]Company average.
[b]Growers only; cane processed by Hilo Coast Processing Co.
[c]Grower only; cane processed by Olokele Sugar Co., Ltd.
[d]Produced 52,297 tons of raw sugar for growers "b."

HAWAIIAN SUGAR COMPANIES PRODUCTION FOR 1993
(Raw Value)

Company	Total Caneland Acreage	Acres Harvested	Production (short tons)	Tons Sugar Per Harvested Acre
A&B-HAWAII, INC.				
Hawaiian Commercial & Sugar Co. (Maui)	35,957	16,726	224,677	13.43
McBryde Sugar Co., Ltd. (Kauai)	6,907	2,893	14,493	5.01
Total A&B	**42,864**	**19,619**	**239,170**	**11.34[a]**
AMFAC/JMB HAWAII, INC. (Amfac)				
Kekaha Sugar Co., Ltd. (Kauai)	8,191	4,051	41,629	10.28
The Lihue Plantation Co., Ltd. (Kauai)	10,826	5,513	33,171	6.02
Oahu Sugar Co., Ltd. (Oahu)	7,154	4,751	63,693	13.41
Pioneer Mill Co., Ltd. (Maui)	6,225	3,059	37,484	12.25
Total Amfac	**32,396**	**17,374**	**175,977**	**10.13[a]**
C. BREWER AND CO., LTD. (Brewer)				
Ka'u Agribusiness Co., Inc. (Hawaii)	12,535	4,407	45,677	10.36
Mauna Kea Agribusiness Co., Inc. (Hawaii)	4,279	6,293	55,567[b]	8.83
Olokele Sugar Co., Ltd. (Kauai)	4,713	2,517	26,591	10.56
Total Brewer	**21,527**	**13,217**	**127,835**	**9.67[a]**
DOLE FOOD CO. INC.				
Waialua Sugar Co., Inc. (Oahu)	11,946	5,572	58,908	10.57
HAMAKUA SUGAR CO., INC. (Hawaii)	13,669	7,117	56,756	7.97
GAY & ROBINSON, INC. (Kauai)	2,747	1,355	15,662[c]	11.56
HILO COAST PROCESSING CO. (Hawaii)			[d]	
UNITED CANE PLANTERS' COOPERATIVE (20 member growers, Hawaii)	688	451	3,097[b]	6.87
TOTAL ALL COMPANIES	**125,837**	**64,705**	**677,405**	**10.47**

[a]Company average.
[b]Growers only; cane processed by Hilo Coast Processing Co.
[c]Grower only; cane processed by Olokele Sugar Co., Ltd.
[d]Produced 52,297 tons of raw sugar for growers "b."

capable of bringing new dollars into the economy are vital to Hawaii's balance of trade and its residents' standard of living.

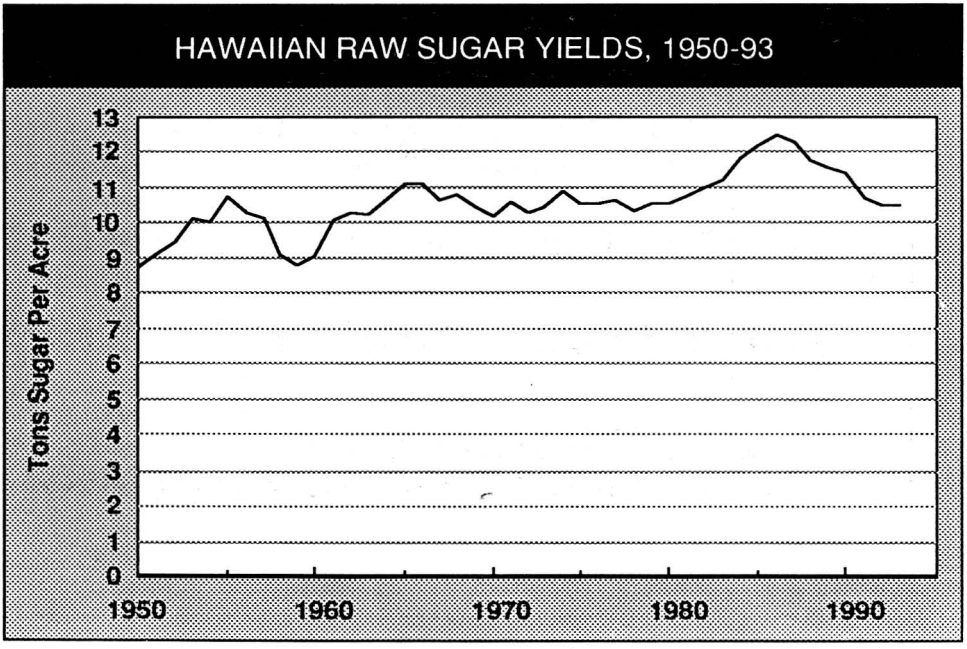
For nearly a century, agriculture—including sugar production—was the state's leading economic activity. It provided Hawaii's major sources of employment, tax revenues, and new capital through exports of raw sugar and other farm products. However, with statehood in 1959 and the almost simultaneous introduction of passenger jet airplanes, the tourist industry began to grow rapidly. Within a decade the tourist industry became the state's largest economic activity.

Today, agriculture—together with tourism, federal activities, and construction—remains one of Hawaii's largest economic activities. The stability of the state's economy would be critically disturbed by a sudden change or reduction in any of these economic sectors.

SUGAR PRODUCTION IN 1992 AND 1993

Hawaiian raw sugar production totaled 677,405 tons in 1993, up from 652,304 tons in 1992. The average industry yield in 1993 was 10.5 tons of raw sugar per acre (TSA), about the same as in 1992.

Several factors contributed to the lower tonnage and yield in 1992 from the previous year, when raw sugar production was 724,100 and the average TSA was 10.7. By far the most dramatic was Hurricane *Iniki*, which hit Kauai in September 1992, at which time about 70 percent of the island's sugarcane crop for that year had been harvested and processed. It devastated the sugar companies and everything else on that island, as well as causing some damage on the island of Oahu. Kauai's sugar factories were heavily damaged and cane fields were



CANE SUGAR PRODUCTION IN HAWAII FROM 1908 THROUGH 1993

(Short Tons)

Calendar Year[a]	SUGARCANE PRODUCTION						SUGAR PRODUCED			BY-PRODUCTS	
	Tons Sugar Per Acre	Tons Cane Per Ton Sugar	Total Cane Land Acres	Acres Cane Land Harvested[b]	Tons Cane Per Acre	Tons Cane Production	Raw Tons Converted to 96° Value[c]	Refined Tons Equivalent[d]	Pounds Raw Sugar (96°) Made Per Short Tons of Cane	Tons Molasses Production[e]	Megawatt Hours Electricity Sold For Public Consumption
1908–1909	5.14	7.42	201,641	106,127	38.2	4,050,000	545,738	510,048	270		
1909–1910	4.81	7.78	209,469	110,247	37.4	4,122,000	529,940	495,282	257		
1910–1911	5.16	7.94	214,312	112,796	41.0	4,623,000	582,196	544,120	252		
1911–1912	5.34	7.75	216,345	113,866	41.4	4,711,000	607,863	568,109	258		
1912–1913	4.90	7.99	215,741	113,548	39.1	4,445,000	556,654	520,249	250		
1913–1914	5.54	8.01	217,470	112,700	44.4	5,000,000	624,165	583,345	250		
1914–1915	5.75	7.96	239,800	113,164	45.8	5,184,393	650,970	608,397	251		
1915–1916	5.17	8.14	246,332	115,419	42.1	4,859,424	596,703	557,679	246		
1916–1917	5.57	7.98	247,476	117,468	44.4	5,220,000	654,388	611,591	251		
1917–1918	4.86	8.34	246,813	119,785	40.5	4,855,804	582,192	544,117	240		
1918–1919	5.07	7.81	239,844	119,679	39.6	4,744,070	607,174	567,465	256		
1919–1920	4.91	7.98	247,838	114,105	39.2	4,473,498	560,379	523,730	251		
1920–1921	4.83	8.53	236,510	113,056	41.2	4,657,222	546,273	510,547	235		
1921–1922	4.98	8.23	228,519	124,124	41.0	5,088,062	618,457	578,010	243		
1922–1923	4.85	8.23	235,134	114,182	39.9	4,559,819	554,199	517,954	243		
1923–1924	6.42	7.91	231,862	111,581	50.7	5,661,000	715,918	669,097	253		
1924–1925	6.47	8.06	240,597	120,632	52.2	6,297,000	781,000	730,000	248		
1925–1926	6.58	8.07	237,774	122,309	53.1	6,495,686	804,644	752,020	248		
1926–1927	6.68	8.41	234,809	124,542	56.1	6,992,082	831,648	777,258	238		
1927–1928	7.00	8.37	240,769	131,534	58.6	7,707,330	920,887	860,661	239		
1928–1929	7.16	8.05	239,858	129,131	57.7	7,447,494	925,140	864,636	248		
1929–1930	7.02	8.36	242,761	133,840	58.7	7,853,439	939,287	877,858	239		
1930–1931	7.43	8.33	251,533	137,037	61.9	8,485,183	1,018,047	951,467	240		
1931–1932	7.57	8.38	251,876	139,744	63.4	8,865,323	1,057,303	988,155	239		
1932–1933	7.34	8.05	254,563	144,959	59.1	8,566,781	1,063,605	994,045	248		
1933 (10/1–12/31)	—	—	—	—	—	—	127,317	118,990	—		
1934	7.14	8.33	252,237	134,318	59.5	7,992,260	959,337	896,596	240		
1935	7.82	8.67	246,491	126,116	67.8	8,555,424	986,849	922,309	231		
1936	7.97	8.80	245,891	130,828	70.1	9,170,279	1,042,316	974,149	227		
1937	7.46	9.32	240,833	126,671	69.5	8,802,716	944,382	882,619	215		
1938	6.92	9.39	238,302	135,978	65.0	8,835,370	941,293	879,732	213		
1939	7.18	8.66	235,227	138,440	62.2	8,609,543	994,173	929,154	231		
1940	7.16	8.76	235,110	136,417	62.7	8,557,216	976,677	912,802	228		
1941	7.24	9.04	238,111	130,768	65.5	8,559,797	947,190	885,244	221		
1942	7.58	9.10	225,199	114,745	69.0	7,918,342	870,099	813,195	220		
1943	7.79	9.24	220,928	113,754	71.9	8,185,400	885,640	827,719	216		
1944	7.99	8.95	216,072	109,522	71.5	7,832,185	874,947	817,725	223		
1945	7.96	8.98	211,331	103,173	71.4	7,371,158	821,216	767,509	223		
1946	8.06	8.83	208,376	84,379	71.1	6,002,127	680,073	635,596	227	212,230	
1947	7.72	9.11	211,624	113,020	70.3	7,942,216	872,187	815,146	220	285,190	
1948	8.35	9.03	206,550	100,042	75.4	7,542,613	835,107	780,491	221	254,740	
1949	8.76	8.44	213,354	108,794	73.9	8,045,941	955,890[f]	893,375	238	251,500	
1950	8.78	8.51	220,383	109,405	74.7	8,174,821	960,961[g]	898,114	235	259,130	
1951	9.09	8.51	221,212	109,494	77.4	8,477,201	955,759	930,636	235	270,585	
1952	9.44	8.52	221,990	108,089	80.4	8,693,920	1,020,450	953,712	235	259,360	
1953	10.15	8.19	221,542	108,337	83.1	9,003,967	1,099,316	1,027,421	244	287,480	
1954	10.02	8.75	220,138	107,480	87.75	9,431,781	1,077,347	1,006,889	228	306,910	
1955	10.74	8.66	218,819	106,180	92.94	9,867,978	1,140,112	1,065,525	231	295,550	
1956	10.28	9.01	220,606	106,956	92.65	9,909,990	1,099,543	1,027,633	222	305,580	
1957	10.16	8.71	221,336	106,742	88.51	9,447,647	1,084,646	1,013,710	230	303,700	
1958	9.09	9.87	221,683	84,136	89.77	7,552,750	764,953	714,925	203	307,210	
1959	8.83	9.66	222,588	110,371	85.31	9,416,225	974,632	910,891	207	330,790	
1960	9.03	9.20	224,617	103,584	83.15	8,613,317	935,744	874,546	217	299,590	
1961	10.09	8.78	227,027	108,320	88.58	9,595,342	1,092,481	1,021,033	228	329,960	
1962	10.31	8.76	228,926	108,600	90.36	9,812,580	1,120,011	1,046,762	228	335,510	
1963	10.25	9.12	231,321	107,436	93.39	10,033,969	1,100,768	1,028,777	219	322,610	
1964	10.64	8.90	233,145	110,759	94.76	10,495,175	1,178,770	1,101,678	225	336,250	
1965	11.11	8.82	235,576	109,600	97.97	10,737,507	1,217,667	1,138,033	227	340,190	
1966	11.12	8.89	237,499	111,005	98.82	10,969,925	1,234,121	1,153,409	225	349,540	
1967	10.65	9.27	239,813	111,837	98.74	11,045,949	1,191,042	1,113,148	216	359,170	
1968	10.85	9.15	242,476	113,525	99.36	11,279,920	1,232,182	1,151,597	218	368,050	
1969	10.44	9.17	242,216	113,232	95.73	10,839,272	1,182,414	1,105,060	218	340,330	
1970	10.21	9.00	238,997	113,816	91.88	10,457,377	1,162,071	1,086,000	222	322,480	
1971	10.62	8.69	232,278	115,810	92.26	10,685,019	1,229,976	1,149,510	230	330,227	
1972	10.32	8.87	229,611	108,456	91.55	9,929,068	1,118,883	1,045,708	225	307,543	
1973	10.43	8.55	226,580	108,189	89.15	9,645,452	1,128,529	1,054,723	234	301,500	
1974	10.86	8.73	224,227	95,826	94.76	9,082,684	1,040,742	972,677	229	293,380	
1975	10.53	8.57	221,426	105,125	90.23	9,485,299	1,107,199	1,034,788	233	301,335	
1976	10.51	8.73	221,551	99,926	91.79	9,172,649	1,050,457	981,757	229	275,352	
1977	10.68	8.70	220,729	96,770	92.95	8,994,388	1,033,739	966,132	230	284,349	
1978	10.36	9.00	220,697	99,355	93.23	9,263,190	1,028,933	961,641	222	310,238	
1979	10.53	9.09	218,773	100,610	95.74	9,632,135	1,059,737	990,430	220	325,843	
1980	10.51	9.00	217,718	97,358	94.64	9,214,136	1,023,232	956,313	222	315,088	232,000
1981	10.74	8.43	216,099	97,573	90.51	8,831,477	1,047,541	979,032	237	311,719	214,000
1982	11.01	8.96	204,749	89,261	98.68	8,807,998	982,913	918,630	224	287,190	299,406
1983	11.25	8.55	194,258	92,808	96.18	8,926,358	1,044,204	975,913	234	303,254	288,698
1984	11.86	7.96	188,396	89,541	94.41	8,453,721	1,061,814	992,371	251	314,202	280,943
1985	12.19	7.82	187,858	83,029	95.35	7,916,459	1,012,249	946,048	256	271,645	332,871
1986	12.47	8.04	184,181	83,583	100.25	8,379,463	1,042,452	974,276	249	290,422	433,029
1987	12.32	8.18	180,966	79,498	100.79	8,012,899	979,209	915,169	244	283,250	384,419
1988	11.77	8.19	177,693	78,861	96.40	7,602,414	928,195	867,491	244	274,375	438,503
1989	11.57	8.20	170,813	74,660	94.81	7,078,479	863,614	807,134	244	229,377	422,806
1990	11.38	7.98	161,991	71,998	90.85	6,540,925	819,631	766,027	251	220,859	411,216
1991	10.69	8.08	155,609	67,716	86.43	5,852,668	724,100	676,744	247	202,214	431,230
1992	10.50	8.33	145,790	62,123	87.44	5,432,286	652,304	609,643	240	203,739	389,660
1993	10.47	8.13	125,837	64,705	85.14	5,506,072	677,405	633,103	246	211,412	335,740

[a]Until 1934 represented period from October 1 through September 30.

[b]The average growth of a crop is from 22 to 26 months. Only a portion of the total acreage in cane is harvested each year.

[c]Converted in accordance with Sugar Regulations, Series 1, No. 1, U.S. Department of Agriculture, Agricultural Adjustment Administration, issued February 18, 1935, or Section 101(h) of the Sugar Act of 1948 or corresponding provisions of its predecessors as the case may be.

[d]One ton of sugar, 96° test is assumed to be equivalent to 0.9346 tons of refined.

[e]Actual weight; unconverted to 85° Brix.

[f]Includes 2,369 tons raw sugar produced from volunteer cane for which no acreage shown.

[g]Includes 2,690 tons raw sugar produced from volunteer cane for which no acreage shown.

flattened. The 1993 average industry yield for raw sugar dipped only slightly, primarily because of lower yields on Kauai reflecting hurricane damage to the crop. Because sugarcane is a two-year crop in Hawaii, the 1994 Kauai sugar production likely will again reflect the adverse effects of the hurricane.

Lower sugar production in 1992 and 1993 from 1991 resulted from a combination of lower yields and fewer acres harvested. In 1991, the 67,716 acres harvested produced 724,110 tons of raw sugar. In 1992 and 1993, respectively, the acres harvested were 62,123 and 64,705.

Total acres in sugarcane have dropped significantly in the last two years, from 155,609 acres in 1991 to 125,837 in 1993. Much of this decline is attributable to cane land not being replanted after harvest as Hamakua Sugar Company and Mauna Kea Agribusiness phase out their sugar operations. Both plantations are expected to complete their final harvests in the second half of 1994.

Molasses production was 203,739 tons in 1992 and 211,412 tons in 1993, both figures up from 1991 production of 202,214 tons.

As a result of lower sugarcane production, electrical power production declined in both 1992 and 1993 from 1991 when the industry generated 819 million kilowatt hours (kWh). In 1992, electrical generation was 755 million kWh, and in 1993 production totaled 688 million kWh. The sugar companies use about half of the electricity they make for their production needs and sell the rest to utility companies. In 1993, Hawaii received more than 7 percent of its electrical power from its sugar companies, which generate steam power and electricity primarily from burning bagasse and hydropower. (Bagasse is the fiber residue left after juice has been extracted from the sugarcane). Sugar factories supply up to a third of the electrical needs on each of the neighbor islands where sugar is produced. The industry's use of renewable energy has helped Hawaii to retain its leadership in alternate energy production.

1993 ISLAND LAND AREAS

Island	Length (miles)	Width (miles)	Area Square Miles[a]	Area Acres (x000)	Total Sugar Acres[b]
Hawaii	93	76	4,038	2,584	30,812
Maui	48	26	729	466	42,182
Oahu	44	30	608	388	19,100
Kauai	33	25	553	354	33,743
Molokai	38	10	261	167	—
Lanai	18	13	139	89	—
Niihau	18	6	73	46	—
Kahoolawe	11	6	45	28	—
Minor Islands	—	—	4	2	—
Total			**6,450**	**4,124**	**125,837**

[a]Includes inland water.
[b]Excludes mill sites, roads, etc.

Sugar Lands

The Hawaiian Islands make up America's fourth smallest state. The islands are the tops of volcanic mountains, many still active. Because of the rugged

AVERAGE RAW SUGAR PRICE, EARNINGS, EMPLOYEES & MAN-DAYS

(All Hourly Rated Employees Only, On Hawaiian Sugar Plantations)

Year	Average New York Raw Sugar Price (cents per pound) (Hawaiian basis)[a]	Average Daily Wages[b]	Value Average Daily Employee Benefits	Total Value Average Daily Wages/Benefits	Adult Hourly Rated Employees[c]	Total Man-Days Hourly Rated Employees
1940	2.78	$2.18	—	—	35,062	9,994,863
1945	3.75	5.10	—	—	20,806	6,350,489
1950	5.95	10.62	—	—	15,935	3,896,761
1960	6.31	13.18	4.40	17.58	12,111	2,917,459
1965	6.75	18.40	6.50	24.90	10,346	2,505,839
1970	8.08	24.24	10.00	34.23	8,908	2,139,183
1971	8.52	26.08	10.27	36.35	8,610	2,077,011
1972	9.10	29.09	11.23	40.32	8,127	1,934,563
1973	10.30	30.86	12.48	43.34	7,900	1,897,369
1974	29.43	34.41	15.81	48.73	7,700[d]	1,744,346[d]
1975	22.49	37.34	15.66	53.00	7,800	1,937,973
1976	13.31	43.12	17.28	60.40	7,500	1,854,272
1977	11.11[e]	43.92	19.97	63.89	7,200[f]	1,660,298[f]
1978	13.74	47.06	21.28	68.34	7,200	1,771,530
1979	15.20[g]	50.49	22.21	72.70	7,065	1,762,838
1980	19.74	61.51	27.71	89.22	7,282	1,806,020
1982	19.94	66.80	32.00	98.80	6,543	1,565,928
1984	21.74	68.88	34.71	103.59	6,319	1,467,127
1985	20.39[h]	68.72	35.99	104.71	5,751	1,323,525
1986	20.90[e]	69.28	34.24	103.52	5,413	1,290,067
1987	21.83	71.36	41.83	113.19	5,222	1,261,209
1988	22.12	72.46	34.56	107.02	5,110	1,204,708
1989	22.76	74.64	41.92	116.56	4,721	1,129,526
1990	23.26	76.42	43.07	119.49	4,453	1,065,794
1991	21.57	80.26	44.02	124.28	4,263	1,024,534
1992	21.30	84.11	46.00	130.11	4,101	1,003,876
1993	21.62	—[i]	—	—	—	—

[a]Hawaiian basis is the average New York raw sugar price computed over all the days in the year. The New York price is computed for days the New York market is operating.

[b]Cash wage only; does not include "employee benefits."

[c]Prior to 1947 included only male adults.

[d]Industry-wide strike, 6 weeks.

[e]New York spot price discontinued on Nov. 2, 1977; after that date based on Clearing Association settlement prices.

[f]Industry-wide strike, 3 weeks.

[g]New York spot price reinstituted on Aug. 20, 1979.

[h]New York spot price "nearby futures," effective June 1985. Effective Jan. 1, 1986, "nearby" No. 14 contract futures.

[i]Employee data are no longer collected by the industry.

terrain and nature of the soils, only certain low lands near coasts are tillable. The remaining land is in forest, pasture, and conservation and unusable land.

Consequently, Hawaii's sugar companies are located along the coastlines of the four sugar-producing islands and reach into the foothills and upward along mountain slopes.

In 1993, 125,837 acres were devoted to sugarcane cultivation with another 21,000 acres used for mill sites, private roads, irrigation systems, and other facilities.

Wages and Working Conditions

Hawaii's sugar workers—both field and factory—are members of the International Longshoremen's and Warehousemen's Union (ILWU). A

contract negotiated with the ILWU, from February 1, 1991, to January 31, 1995, included wage rates from a minimum of $8.43 (Grade 1) to $15.08 (Grade 11) per hour.

Unlike some farming areas where crops are seasonal, Hawaii's sugar industry provides year-round, long-term employment. Its employees are the highest paid agricultural workers in the world.

Year-round employees receive up to four weeks vacation with pay, 10 paid holidays a year, paid sick leave for up to 54 days plus a temporary disability supplement for extended illness, a medical plan, a family dental care plan, retirement pensions, severance pay, and many other benefits.

INDUSTRY ORGANIZATION

Hawaiian Sugar Planters' Association

The Association

On March 23, 1882, sugar planters in the then Kingdom of Hawaii met and organized the Planters' Labor and Supply Company. This organization evolved into the Hawaiian Sugar Planters' Association (HSPA), with a change in name and bylaws in 1895, but with no break in the objectives, membership, etc. from the Planters' Labor and Supply Company.

The Association is a voluntary, nonprofit, incorporated association organized for the maintenance, advancement, improvement, and protection of the sugar industry in Hawaii and for the support of a sugarcane research station. Companies engaged primarily in the business of growing sugarcane and manufacturing sugar from it are plantation members of the Association. Individuals directly connected with the direction, management, or operation of the sugar companies are individual members.

The Association compiles information, answers inquiries, and coordinates activities on the problems of common interest to its members. Many of these functions are carried out through the following standing committees: Accounting, Energy, Environmental Standards, Experiment Station Advisory, Human Resources, Land and Water, Legal Advisory, Legislative, Raw Sugar Technical, and Tax.

The Association has maintained an office in Washington, D.C. since 1898. A vice president represents member company interests in federal legislative, administrative, and regulatory activities.

The Experiment Station

The Association's single largest program is research conducted through its Experiment Station. The Station conducts research on sugarcane for the benefit of all sugarcane growers and processors in Hawaii. Research at the Station began in 1895 and has led to consistent and substantial improvements for the industry.

The largest single program of the Experiment Station is the development of new sugarcane varieties. The Station has

been a world leader in developing methods for breeding sugarcane. Other important contributions include the development of irrigation systems and methods for controlling insects, diseases, weeds, and rodents. It has improved sugarcane factory processes and methods of factory process control. Its work has resulted in higher sugar recovery and in improvements in raw sugar quality. Although its research is directed at practical problems in growing and milling sugarcane, the Station performs basic research on the physiology and biochemistry of the sugarcane plant when such information is unavailable from other sources.

The Experiment Station provides many important services to its member companies, such as analyses of raw sugar and molasses; plant and soil analyses to determine fertilizer needs; repair and calibration of sugar factory instruments; field, factory, and factory laboratory audits; and employee training.

In addition to its headquarters, offices and laboratories in Aiea, Oahu, the Experiment Station has substations on each of the four islands on which sugarcane is grown—Hawaii, Kauai, Maui, and Oahu. One of its principal substations on Oahu operates specifically for maintaining breeding varieties and crossing them to develop improved varieties of sugarcane. The Experiment Station also has a large and complete library, with a collection of reference books and periodicals on sugarcane growing and milling, as well as a comprehensive collection of journals and reference books on agriculture, chemistry, and engineering.

California and Hawaiian Sugar Company

The California and Hawaiian Sugar Company (C&H) was founded in 1906 and operated from 1921 to 1993 as an agricultural cooperative marketing association owned by the member sugar companies in Hawaii. In 1993, the member companies sold their interests in C&H to Alexander & Baldwin, Inc. in Honolulu, and the refining company's status changed from a cooperative to a corporation.

The C&H brand is the leading sugar brand in the company's markets. C&H's primary market is the west of the Mississippi River, although some sugar is sold on the eastern seaboard. More than 100 types, grades, and package sizes are sold within the two major groupings of grocery and industrial products.

The company operates refineries at Crockett, California, and Aiea, Hawaii. It refines, packages, and markets all of the output from Hawaii's sugar factories. The C&H corporate offices are located at 830 Loring Avenue, Crockett, California 94525-1199.

U.S. SWEETENER INDUSTRY

SWEETENER INDUSTRY

In 1993, an estimated record 18.7 million tons of natural, caloric sweeteners—virtually all as cane and beet sugar and corn syrups—were consumed in the United States. On a per capita basis, consumption was estimated at 144.9 pounds of caloric sweeteners for each American. (Consumption refers to the deliveries of sweeteners for food and beverage use, not the amount actually eaten, which would be a smaller number.)

Caloric sweetener consumption continued the gradual rise experienced during the 1980s. In 1980, consumption averaged 123.9 pounds per person. Since then, annual per capita consumption has averaged 132.8 pounds, and has averaged about 141.6 pounds over the last 5 years. The balance of national needs was met by the synthetic low-caloric and noncaloric sweeteners aspartame and saccharin.

About 56 percent of all caloric sweeteners is consumed as ingredients in industrial products: cereal and bakery products, confections, ice cream and other dairy products, beverages, prepared foods, and jams and jellies. A small percentage is used for nonfood industrial products such as pharmaceuticals and tobacco. Most of the remaining 44 percent consumed is delivered to wholesalers and retail grocers.

In 1993, about 45 percent of all caloric sweeteners consumed was sugar—domestic and imported cane and domestic beet sugar. A little more than 54 percent was corn sweeteners—high-fructose,

U.S. CALORIC SWEETENER USE FOR 1975, 1980, 1986–93
(Million Short Tons, Dry Basis)

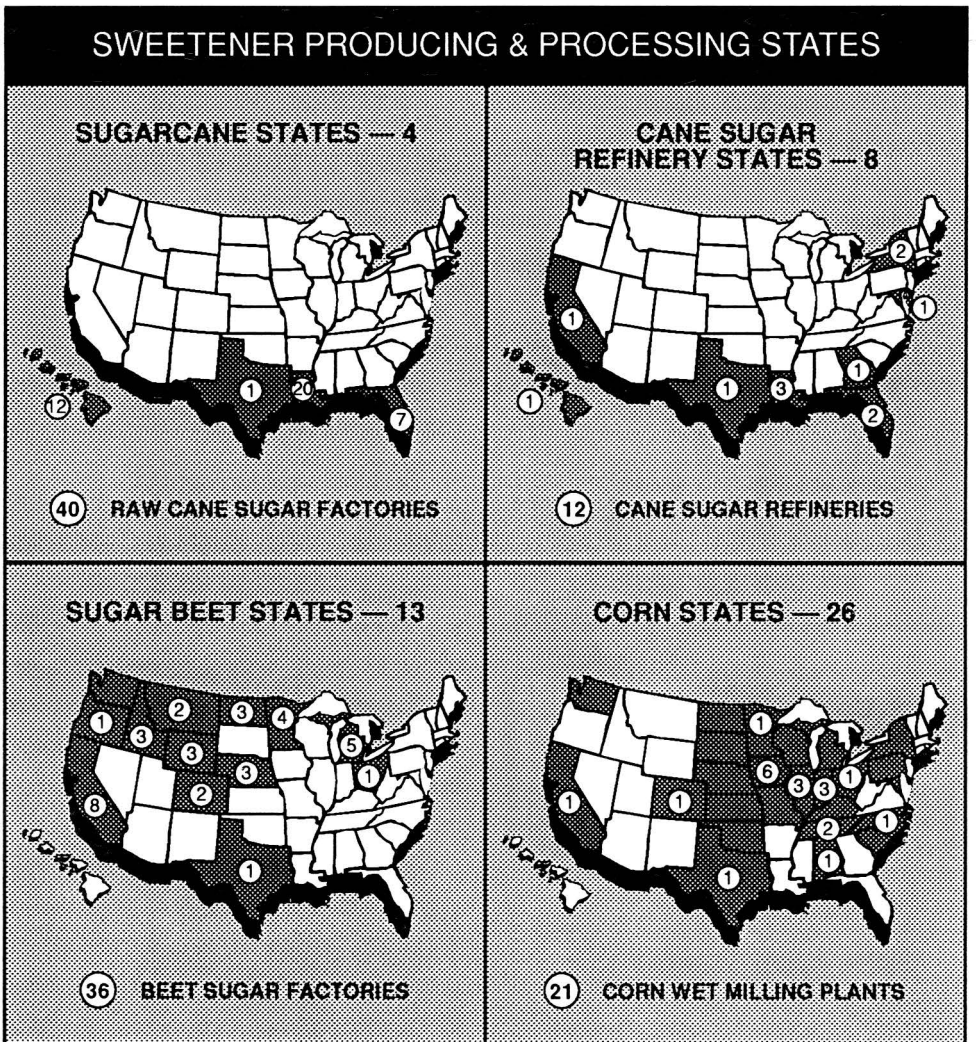
Calendar Year	Sugar Raw	Sugar Refined	High-Fructose Corn Syrup	Total Corn Sweeteners HFCS,Glucose & Dextrose	Honey and Edible Syrups	Total[a]
1975	10.30	9.63	0.53	2.96	0.15	12.74
1980	10.19	9.52	2.10	4.44	0.09	14.05
1986	7.73	7.23	5.49	8.20	0.12	15.55
1987	8.10	7.57	5.73	8.49	0.12	16.18
1988	8.14	7.60	5.95	8.77	0.13	16.50
1989	8.30	7.76	6.02	8.93	0.13	16.82
1990	8.62	8.06	6.13	9.14	0.13	17.33
1991	8.72	8.15	6.26	9.34	0.13	17.62
1992	8.83	8.25	6.60	9.88	0.17	18.30
1993[b]	8.98	8.39	6.73	10.11	0.17	18.67

Source: USDA Sugar and Sweetener Situation and Outlook Yearbook, Vol. 18 (2), June 1993.
[a]Sum of refined sugar, total corn sweeteners, and honey and edible syrups. Totals may be slightly more or less because of rounding.
[b]Preliminary estimate.

glucose, and dextrose corn syrups. Less than one percent was honey and other edible syrups.

SUGAR INDUSTRY

American sugar needs are met from both domestic and foreign sources. In 1993, the United States produced more than three-fourths of the sugar for its needs. Remaining needs were filled by imported sugar. U.S. sugar imports are regulated through country-by-country quota allocations awarded to 41 nations. For fiscal years 1992-93 and 1993-94, the quota allocation was 2.5 million tons of raw sugar, of which 1.5 million tons had been imported through November 25, 1993.



Sugarcane, sugar beets, and corn to make nutritive sweeteners are grown and processed in 32 states. Sugarcane is processed into raw sugar in 40 mills in 4 states. Raw cane sugar is refined at 12 refineries in 8 states. Sugar beets are processed into refined sugar in 36 factories in 13 states. Corn is grown or processed, or both, into corn sweeteners in 26 states.

Of the estimated 7.8 million short tons of sugar (raw value) produced in the United States in fiscal year 1993, 3.4 million tons were from sugarcane and 4.4 million from sugar beets.

Cane Sugar Production

Sugarcane is grown and milled in Florida, Hawaii, Louisiana, and Texas. It is a one-year crop in all areas except Hawaii, where it is a two-year crop.

Florida was the leading producer of raw cane sugar with an estimated 1.7 million tons in fiscal year 1993 (September 1992/August 1993). Louisiana was second with 0.9 million tons. Hawaii and Texas followed with 0.7 and 0.1 million tons, respectively.

Hawaii produces the most tons of raw sugar per acre (TSA). In 1993, Hawaii's average yield was 10.5 TSA (5.3 TSA on an annual basis). Florida was next with 4.0 TSA, followed by Texas with 3.7 TSA and Louisiana with 2.5 TSA.

U.S. raw cane sugar production has increased from an average of about 2.68 million tons in 1980 to 3.4 million tons in 1993. This increase has been due chiefly to the expansion of Florida's industry from 0.8 million tons in 1976 to 1.7 million tons in 1993. Hawaii's production of 1.1 million tons in 1975 declined to 0.7 million tons in 1993.

More than half of all refined sugar consumed in the United States comes from sugarcane. Most cane sugar is refined in 7 refineries in 6 Gulf and East Coast states. The large California & Hawaiian Sugar Co. refinery near San Francisco refines Hawaiian raw sugar for Mainland markets, and the C&H refinery near Honolulu produces granulated and liquid sugars for the Hawaiian market.

U.S. CANE AND BEET SUGAR PRODUCTION 1989/90–1993/94
(1,000 Short Tons, Raw Value)

Crop Year (Sept./Aug.)	Cane Sugar	Beet Sugar	Beet & Cane Sugar
1989/90	3,176	3,442	6,618
1990/91	3,152	3,842	6,994
1991/92	3,430	3,845	7,275
1992/93	3,376	4,392	7,768
1993/94[a]	3,436	4,100	7,536

Source: USDA Sugar and Sweetener Situation and Outlook Report, Vol. 19 (1), March 1994.

[a] Forecast.

Beet Sugar Production

Sugar beets in 1993 were harvested from 1.4 million acres in 16 states in the Midwest, Great Plains, and West. The leading sugar beet producing states were Minnesota, Idaho, California, and North Dakota, and Michigan, respectively.

In 1993, an estimated 29.1 million tons of sugar beets were harvested. Sugar production was an estimated 4.4 million tons (raw value). By comparison, annual beet sugar production averaged 3.8 million tons during 1975-77.

Although beet sugar production is converted to a raw basis for comparisons, beets are processed directly to refined sugar. In contrast, sugarcane is processed at local mills into raw sugar, which is shipped to refineries serving large urban centers and processed into refined sugar products.

CORN SWEETENER INDUSTRY

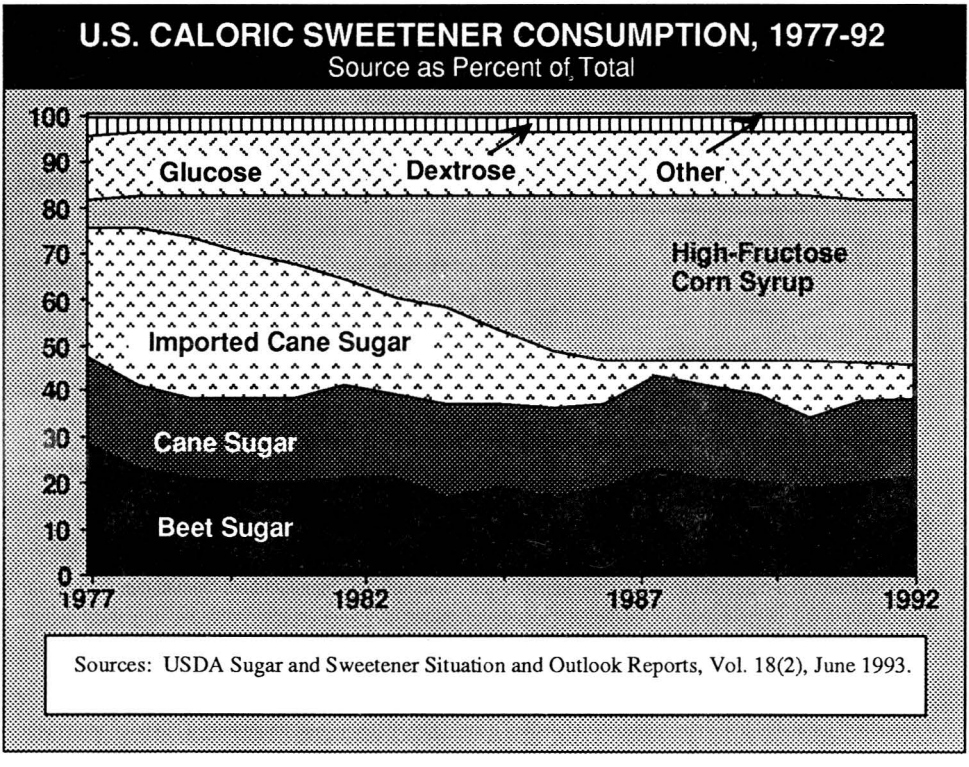
Corn is grown in significant quantities in about two dozen states. In fiscal year 1993, U.S. corn sweetener consumption was an estimated record 10.1 million tons (dry basis), up 3.1 percent from 1992. In fiscal year 1993, 629 million bushels of corn, or 6.6 percent of the crop, were used for corn sweetener production.

The dominant corn sweetener is high-fructose corn syrup (HFCS), which has captured almost all of the U.S. liquid caloric sweetener market from sugar. HFCS manufacturers dominate the liquid sweetener market because they are able to consistently price their product under sugar's.

HFCS is sold mostly as HFCS-55 or HFCS-42. The numerals indicate the percent of fructose in the mixture, with HFCS-55 having the equivalent sweetness of sugar. HFCS-55 is the predominant corn sweetener, comprising 59 percent of the corn sweetener shipments in 1993.

Glucose syrup and dry dextrose are the other sweeteners produced from corn. Corn sweeteners make up one of a group of co-products produced by corn wet millers. Other co-products include starch, crude corn oil, gluten feed, and gluten meal.

HFCS prices are discounted to wholesale refined beet sugar prices (bulk basis). The discounts vary because of a number of factors. The most important factor is the price of sugar. In 1993, the annual average prices of HFCS-42 and HFCS-55 were discounted 25.1 and 16.8

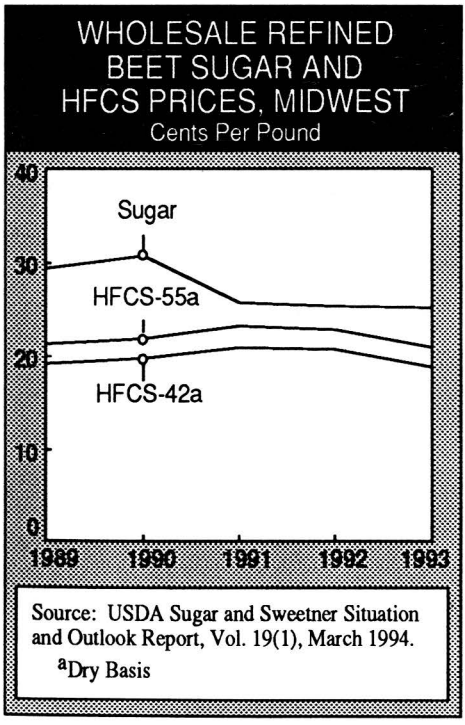


U.S. SUGAR DELIVERIES TO INDUSTRIAL & NONINDUSTRIAL USERS 1989–93

(1,000 Short Tons, Refined)

	1989	1990	1991	1992	1993
INDUSTRIAL USE					
Food Products					
Bakery/Cereals	1,531	1,607	1,632	1,719	1,783
Confectionery	1,188	1,277	1,276	1,246	1,291
Ice Cream/Dairy	426	460	439	429	424
Bottled/Frozen Foods	342	331	332	315	334
All Other Food Uses	637	641	623	649	730
Subtotal	4,124	4,316	4,302	4,358	4,562
Beverages	215	228	204	164	161
Total Industrial	**4,339**	**4,544**	**4,506**	**4,522**	**4,723**
NONINDUSTRIAL USE					
Institutions	106	106	99	101	108
Wholesalers, Jobbers	2,051	2,121	2,078	2,104	2,078
Retail Grocery	1,026	1,071	1,182	1,230	1,235
All Other Food Uses	75	75	107	233	171
Total Nonindustrial	**3,258**	**3,373**	**3,466**	**3,668**	**3,592**
Total Food/Beverage Uses	7,597	7,917	7,972	8,190	8,315
Nonfood Uses	126	107	89	69	79
TOTAL DELIVERIES	**7,723**	**8,024**	**8,061**	**8,259**	**8,394**

Source: USDA Sugar and Sweetener Situation and Outlook Yearbook, Vol. 19(1), March 1994.



percent, respectively, to the average beet sugar price.

Other factors affecting HFCS prices include demand, excess or limited plant capacity, and variable stocks of corn, soybeans, and other feed and oil products. Nonetheless, HFCS has always remained lower in price than sugar.

In fiscal year 1993, HFCS deliveries totaled 6.8 million tons (dry basis). Combined glucose and dextrose deliveries were 3.3 million tons (dry basis).

SWEETENER MARKET

The U.S. caloric sweetener market, which has undergone considerable change over the past decade,

appears to have entered a period of slow, stable growth in consumption tied to population increases.

Further gains in market share by corn sweeteners, especially HFCS, appear limited under present technology. HFCS consumption, which increased 19 percent between 1981 and 1985, has risen less than 4 percent or less over each of the last five years. Today, more than 70 percent of HFCS is used in soft drinks.

Further growth in HFCS consumption in the long term is expected to be restricted by limited additional sugar substitution, population growth, and the increased use of low-caloric and non-caloric sweeteners, particularly in soft drinks. Consumption of diet soft drinks has grown from 23 percent in 1985 to about one-third of total soft drink consumption today.

The Midwest prices of HFCS in 1993 followed the downward lead of Midwest wholesale refined beet sugar price (bulk basis). The annual average wholesale refined beet sugar price was 25.15 cents per pound, down slightly from the 1992 average of 25.44 cents. Average Midwest prices for HFCS-55 in 1993 were 20.93 cents per pound (dry basis), down from 23.00 in 1992. The price for HFCS-42 was 18.83 cents, down from 20.70 cents. Both net corn and starch costs in 1993 were up slightly from 1992.

Sugar deliveries remained steady in 1993 at 8.9 million tons (raw value), up from 1992 deliveries of 8.8 million tons. This increase in deliveries continues a trend in increased demand because of population growth, higher per capita consumption, and strong industrial demand.

The average annual U.S. raw sugar price in 1993 was 21.62 cents a pound, up 0.31 cents from 1992. The highest monthly average was for December at 22.00 cents per pound and the lowest was for January at 20.76 cents.

U.S. SUGAR LEGISLATION

Sugar in the United States, as in virtually all other sugar-producing nations, has long been under various forms of governmental control.

A tariff on sugar to support federal governmental activities was the first piece of general legislation enacted by the first U.S. Congress in 1789. Tariffs on sugar imports remained an important source of government revenue until enactment of federal income and corporate taxes early in this century.

The Sugar Act

From 1934 to 1974, sugar production, wages and working conditions, and other aspects of the U.S. sugar industry were governed by a series of laws known as the Sugar Act. Unlike other farm legislation enacted during the 1930s, the Sugar Act was self-supporting. A refiners' tax of 1/2 cent per pound supported the cost of administering the law and of compliance payments made to sugar farmers who agreed to operate under the legislation. During the 40 years of the Sugar Act, the U.S. Treasury collected more than $500 million above its

administrative costs.

Under the Sugar Act, American consumers benefited from a stable supply of sugar at reasonable prices. Only twice during the four decades of the act's life did the prices of refined sugar substantially exceed the increases of the Department of Labor's annual index of all wholesale food prices. That was in 1963 and again in 1974 when world shortages caused sharp rises in sugar prices, fueled by speculative buying. The index also shows that sugar prices were generally above wholesale food prices and more volatile between 1860 and 1934.

With the defeat of the Sugar Act in 1974, the U.S. abandoned a cohesive sugar policy until 1981. This seven-year period was chaotic for American sugar producers. Excess world production, failure to achieve an effective International Sugar Agreement, and little control over subsidized sugar imports into the U.S. threatened the survival of the domestic sugar industry, which produced the nation's sixth largest farm-tonnage crop. At the same time, high-fructose corn syrup began taking away the liquid sweetener market from sugar, intensifying price competition within a shrinking market.

Agriculture and Food Act of 1981

In 1981, Congress, for the first time, included sugar with other major farm commodities in national farm policy legislation: the Agriculture and Food Act of 1981, also known as the Farm Act. This action resulted from two primary concerns. First, uncontrolled imports of volatilely priced foreign subsidized sugar represented unfair competition for American sugar producers and threatened their survival. Second, the national interest could be best served by the country maintaining some self-sufficiency in sugar production to ensure an ample supply of sugar at reasonable prices for U.S. consumers.

The Sugar Provision of the Farm Act, provided protection for domestic sugar producers until September 30, 1986. No cash payments or other government grants

SUGAR LOAN RATES, MARKET STABILIZATION PRICES, & U.S. RAW SUGAR PRICE
(Cents Per Pound)

Sugar Year	By Quarter	Farm Act Loan Rate	Farm Act MSP	N.Y. Price[a]
1986/87	July–Sept.	18.00	21.78	21.94
1987/88	Oct.–Dec.	18.00	21.76	21.73
	Jan.–March	18.00	21.76	22.03
	Apr.–June	18.00	21.76	22.28
	July–Sept.	18.00	21.76	22.37
1988/89	Oct.–Dec.	18.00	21.80	21.81
	Jan.–March	18.00	21.80	22.02
	Apr.–June	18.00	21.80	22.58
	July–Sept.	18.00	21.80	23.54
1989/90	Oct.–Dec.	18.00	21.95	23.07
	Jan.–March	18.00	21.95	23.21
	Apr.–Jun.	18.00	21.95	23.57
	July–Sept.	18.00	21.95	23.31
1990/91	Oct.–Dec.	18.00	—[b]	22.97
	Jan.–March	18.00	—	21.58
	Apr.–June	18.00	—	21.31
	July–Sept.	18.00	—	21.71
1991/92	Oct.–Dec.	18.00	—	21.67
	Jan.–March	18.00	—	21.43
	Apr.–June	18.00	—	21.11
	July–Sept.	18.00	—	21.33
1992/93	Oct.–Dec.	18.00	—	21.37
	Jan.–Mar.	18.00	—	21.16
	Apr.–June	18.00	—	21.51
	July–Sept.	18.00	—	21.90
1993/94	Oct.-Dec.	18.00	—	21.89
	Jan.-Mar.	18.00	—	21.96

Source: USDA Sugar and Sweeteners Situation and Outlook Yearbook, Vol. 19(1), March 1994.

[a]No. 12 contract to June 1985; "nearby futures" until Jan. 1986; "nearby" No. 14 contract futures thereafter.

[b]The USDA has not announced an annual market stabilization price since 1989/90.

were involved, and it was Congress' intent that the program be administered at no cost to the government.

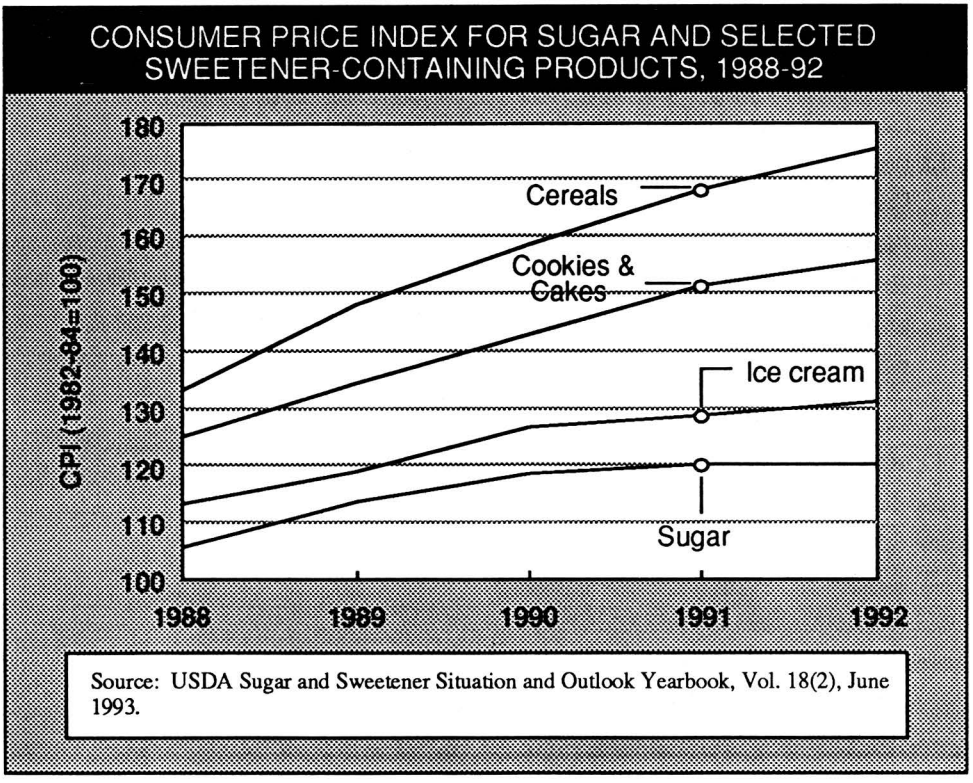
The provision included the following elements:

- A nonrecourse sugar loan program was established. Sugar processors of raw cane or refined beet sugar could place sugar under loan to the Commodity Credit Corporation (CCC) with the sugar as full collateral for the loan.
- A 16.75-cents-per-pound purchase program was included to provide temporary support until October 1, 1982. Loan rates were set at an average of 17 cents per pound of raw sugar and for refined beet sugar at a rate "fair and reasonable" in relation to the raw cane sugar loan rate for the 1982 crop. The loan rate increased at small annual increments to 18 cents per pound for the 1985 crop.

Existing authority under Section 22 of the Agriculture Adjustment Act of 1933 was used to impose fees to protect the program by limiting the amount of foreign sugar entering domestic markets. Later, quotas on foreign sugar under Headnote 2 authority under the Tariff Schedule of the United States were also used for that purpose.

Food Security Act of 1985

The sugar price support program in the 1981 law was extended until September 30, 1990, in the Food Security Act of 1985, with



some minor changes:

- The minimum loan rate was maintained at 18 cents per pound of raw sugar through the five-year life of the bill. The Administration was given authority to increase the loan rate annually based upon changes in the cost of sugar products, the cost of production, and other circumstances adversely affecting domestic sugar production.
- New provisions were included to protect cane and beet growers from nonpayment for their sugar resulting from processor bankruptcies and natural disasters.
- Congress directed the Administration to extend the 1985-86 quota by not less than 3 months, or to take other steps to limit loan forfeitures by an equal amount. The Administration extended the 10-month, 1.85-million-ton quota for three additional months.
- For the 1987 fiscal year and beyond, Congress specified that "the President shall use all authorities...to enable the Secretary of Agriculture to operate the program...at no cost to the Federal Government."

Farm Act Administration

Operating the sugar support program at no cost requires the Administration to make selling sugar in the marketplace more attractive to U.S. sugar producers than forfeiting it under loan to the CCC. The government manages the market price of sugar by controlling the imports of foreign sugar. To determine the necessary price objective, the Administration developed a Market Stabilization Price (MSP), a price equal to the loan rate plus accrued interest, transportation, and an incentive factor.

Market prices are measured by the New York Coffee and Sugar Exchange domestic nearby futures prices for raw sugar. These prices are for sugar, free and clear, landed at a refinery in New York City.

At first, the Administration sought to defend the program by imposing fees and duties on sugar imports. With sharply dropping prices in early 1982, the 50 percent ad valorem fee limit under Section 22 authority and the 2.8125-cent maximum duty soon made those measures inadequate. Country-by-country import quotas were established in May 1982 based upon each country's sales to the U.S. market from 1975 through 1981.

These quotas brought prices up to or somewhat above the MSP, where they remained until the third quarter of 1984. Through February 1987, the price remained below the MSP for several reasons. Excessive quotas, increased imports of sugar blends and high-sugar-content products, illegal diversion of nonquota sugar imports from the re-export to the domestic market, an earlier than anticipated switch by the major soft drink companies to high-fructose corn syrup, and underestimation of domestic sugar production—all played a role in prices falling below the MSP.

The U.S. government took steps to avoid forfeitures of sugar under loan. In November 1984, the U.S. Customs Service ruled that most sugar blends would be included under

quota restraints. In January 1985, the quota year was extended for an additional two months, and the President signed an executive order establishing quotas on certain high-sugar-content products. Sugar loan maturity dates were extended to avoid forfeitures.

Measures like these, however, were nullified by excessive import quotas. The import quotas announced in September 1985 for the 1986 fiscal year at 1.85 million tons for the 10 months remaining were as much as 800,000 tons in excess of the market's needs. The excessive quota followed heavy lobbying by foreign sugar suppliers, particularly Caribbean nations.

The excess imported sugar caused a sharp reduction in the price of sugar to almost 3 cents below the MSP and resulted in Florida producers forfeiting 0.30 million tons of sugar to the CCC at a governmental cost of $107 million. This was the first and only forfeiture of sugar under the 1981 Farm Act, except for sugar forfeited because of processor bankruptcy.

In April 1986, the Administration extended the fiscal year 1986 quota by three months in response to a Congressional directive. The price of sugar improved somewhat, but it lingered about 0.5 cent or more below the MSP of 21.50 cents per pound throughout the rest of 1986. Meanwhile, sugar loans were extended beyond the six-month time limit in the hope that prices would improve enough to make the marketplace once again more attractive than forfeitures to the CCC.

In December 1986, the Administration announced a sugar import quota of 1.0 million tons for calendar year 1987, a 40 percent reduction from the prior 13-month quota. Less imported sugar was needed because of carryover stocks, a further decline in sugar consumption, an increase in domestic sugar production (primarily beet sugar), and nonquota sugar-blend product imports.

In January 1987, the Administration, repeating its opposition to the sugar program, presented a fiscal 1988 budget to Congress with changes to the sugar provisions of the 1985 farm law. One change, to be phased in over four years, would have lowered the loan rate from 18 cents to 12 cents per pound and instituted direct payments. The direct payment program would have cost an estimated $1.2 billion over four years.

Sweetener industry supporters contended that the program would destroy the domestic sugar industry, reduce sugar revenues by one-third to debtor nations holding U.S. sugar quotas, and violate the no-cost provision of the current farm law. This effort by the Administration was not successful.

The 1988 import quota was reduced to 757,000 tons in response to further increases in domestic production, particularly beet sugar production. This quota was later raised to 1.0 million tons. Reacting to the lower import quota, the CBI countries and the Philippines successfully lobbied for an import-reexport program that was included in an amendment in the FY '88 Continuing Resolution by Senator Inouye (D-Hawaii). The amendment, supported by the U.S. sugar

producers, provided for an additional 400,000 of imported raw sugar. The program was also included in the FY '89 Agriculture Appropriations bill. The Administration refused to implement the program in both years citing lack of legal authority and budget costs. The program was also added to the FY '90 funding bill.

In December 1988, the USDA announced a calendar 1989 quota of 1,240,380 tons. The quota was subsequently increased four times to 3,124,905 tons, and the quota period was extended to September 30, 1990.

Food, Agriculture, Conservation, and Trade Act of 1990

On November 28, 1990, the President signed into law the Food, Agriculture, Conservation, and Trade Act of 1990, which included the following sugar provisions:

- Continuation of the 18-cent per pound loan rate for raw cane sugar;
- Extension of the loan period from 6 to 9 months; and
- A minimum quota of 1.25 million short tons for imported sugar, with marketing allocations imposed on domestic sweetener producers if imports fall below the quota minimum.

In addition, the Budget Reconciliation Act of 1990 added a market fee of one percent of the loan rate. At current production levels the fee will cost Hawaii's sugar producers $2.5 million a year over the five-year life of the farm bill.

The sugar industry's victory to have the sugar support program renewed was dampened when, just two days after the President had signed the farm bill into law, the USDA announced a supplemental increase in the 1990/91 sugar import quota of 413, 000 tons, raising the total to 2.3 million tons for the quota period. This was the largest quota since 1983/84, and, on an annualized basis, it was 30 percent higher than the 21-month quota for 1989/90. The higher quota together with higher-than-expected domestic production significantly weakened sugar prices.

In the first quarter of 1991, the domestic raw sugar price averaged 21.59 cents per pound, more than 7 percent lower than the average 1990 raw sugar price of 23.26 cents and the lowest since the 1986 fourth-quarter average of 21.12. For all of 1991, the average raw sugar price was 21.57 cents. The USDA has not announced an MSP since 1989/90.

By keeping import quotas for sugar high relative to actual domestic market demand, the Administration in 1991 appears to have achieved in the marketplace what it was unable to achieve in the 1990 Farm Bill: a two-cent reduction in the sugar support program loan rate.

North American Free Trade Agreement

In February 1991, President Bush announced his intention to negotiate a free trade agreement with Mexico and Canada. Any eventual agreement, called the North American Free Trade Agreement (NAFTA), became part of the fast-track legislation for the General Agreement on Tariffs and Trade for which the Administration sought and

received a two-year extension from Congress in May 1991.

Initially, the domestic sugar industry took no position on NAFTA because the government had not addressed sugar in the negotiations. A study by the U.S. International Trade Commission on the effects that free trade between the United States and Mexico would have on agricultural products did not include sugar. This greatly concerned the U.S. sugar industry because Mexico is the world's eighth largest sugar producer, and a trade agreement with unfair trade incentives could induce that country to quickly become a net exporter of sugar.

During 1991 and 1992, the industry worked with Congress, the Administration, and other commodity groups to ensure that any agreement reached on the NAFTA provided fair treatment of the nation's efficient sugar producers vis a vis Mexico's less efficient producers. In August 1992, an agreement was reached between the U.S. and Mexico on the NAFTA. The provisions regarding sugar generated great concern among U.S. sugar growers because they would have stimulated Mexico to easily and rapidly create an artificial surplus of as much as 1.5 million tons of raw sugar for export to the U.S. market. Such a flood of sugar would have scuttled the U.S. sugar program and decimated, if not resulted in, the complete collapse of the U.S. sugar industry.

In November 1992, a Democratic president was elected for the first time in twelve years, and U.S. sugar growers were hopeful that the new administration would work for side provisions to the NAFTA to ensure both open and fair trade in sugar between the U.S. and Mexico.

Their hopes were realized in November 1993 when U.S. trade negotiators completed a side agreement with their Mexican counterparts to correct technical flaws in the NAFTA. In the same month, the House of Representatives passed the NAFTA by a vote of 234 for and 200 against, a margin of victory larger than many observers had predicted.

Fair trade in sugar and an orderly transition to a common market between the two countries after the 15-year life of the NAFTA is now much more likely.

WORLD SUGAR INDUSTRY

PRODUCTION, TRADE, CONSUMPTION

Sugar is produced in about 100 nations in both temperate and tropical regions of the globe. It is one of the world's most volatilely priced food commodities, and one of the world's most regulated.

Total world sugar production in the 1992/93 crop year was estimated at 111.3 million metric tons (raw value) by the U.S. Department of Agriculture, down 4.6 million tons from 1991/92. The decline resulted from lower production in Cuba, India, South Africa, and Thailand, as well as in beet sugar producing countries in Eastern Europe and in Ukraine. *(Note: All sugar tonnages in this section are reported in metric tons.)*

World sugar consumption was estimated at 112.4 million tons, up 1.1 million tons from 1991/92. World stockpiles were estimated at 24.4 million tons, up 2.5 million tons from 1991/92. This marked the fifth straight year that world stockpiles were below 25 million tons.

More than 70 nations exported 27.3 million tons to more than 70 countries that rely on imports to meet all or part of their sugar needs. Some importing nations also export sugar; the resulting net exports can range from 10 to 20 percent below total exports reported. The majority of sugar is consumed within the countries in which it is produced.

Most of the world's producers and consumers are protected from market price fluctuations through a variety of domestic sugar support programs that include import restrictions or embargoes, price supports, grower and export subsidies, and other

WORLD'S 10 LARGEST PRODUCING, EXPORTING, IMPORTING, AND CONSUMING NATIONS FOR 1993/94 (x Million Metric Tons, Raw Value)

Producers		Exporters		Importers		Consumers	
Nation	Tons	Nation	Tons	Nation	Tons	Nation	Tons
EC	17.4	EC	7.3	Russia[a]	3.6	India	14.1
India	12.4	Cuba	3.5	EC	2.9	EC	13.2
Brazil	9.9	Australia	3.5	Japan	1.7	U.S.	8.3
China	7.6	Thailand	2.8	U.S.	1.6	China	7.9
U.S.	6.9	Brazil	2.6	So. Korea	1.3	Brazil	7.6
Australia	4.5	Ukraine	2.1	Canada	1.1	Russia[a]	6.1
Cuba	4.3	Guatamala	0.8	China	1.0	Mexico	4.5
Ukraine	4.2	China	0.7	Iran	0.8	Pakistan	2.8
Thailand	4.0	Colombia	0.7	Egypt	0.6	Indonesia	2.7
Mexico	3.9	U.S.	0.5	Ukraine	0.4	Japan	2.5
Total	**75.1**		**24.5**		**15.0**		**69.7**
% of World Total	**66.9**		**82.3**		**50.5**		**60.7**
WorldTotal	**112.3**		**29.7**		**29.7**		**114.9**

Source: USDA Sugar: World Markets and Trade, June 1994.

[a]Russian Federation.

WORLD SUGAR PRODUCTION, EXPORTS, IMPORTS, AND CONSUMPTION BY REGION FOR 1993/94 (x Million Metric Tons, Raw Value)

Region	Production	Exports	Imports	Consumption
North America	10.9	0.6	2.8	14.0
Caribbean	5.5	4.2	0.2	1.5
Central America	2.4	1.3	0.3	1.2
South America	15.4	3.8	0.9	13.0
European Community	17.4	7.3	2.9	13.2
Other Western Europe	1.2	0.1	0.4	1.5
Eastern Europe	3.7	0.6	1.1	4.0
Former Soviet Union & Baltic States	7.2	2.2	5.9	11.1
North Africa	2.1	0.2	2.3	4.3
Sub-Saharan Africa	4.4	1.5	1.8	4.9
Middle East	3.3	0.5	3.7	6.7
Asia	33.7	4.7	7.3	37.5
Oceania	5.0	3.9	0.2	1.2
Total[a]	**112.3**	**29.7**	**29.7**	**115.0**

Source: USDA Sugar: World Markets and Trade, June 1993.

[a]Numbers, which includes unrecorded data to balance exports and imports, may not add precisely because of rounding.

measures in a variety of combinations.

Only about one-fourth of the world's sugar is traded internationally. An even smaller amount—about 15 percent—is traded on the so-called world market. More than a fifth of all trade takes place under special arrangements and at prices much higher than the so-called world price. Little of the sugar traded at the world price is sold to consumers at or near this price. Almost all is sold to consumers at prices based on domestic policies. Japan, for example, has substantial duties and price regulation. In nations where world-priced sugar is available, such as in Canada, the governments provide support to sugar growers.

For sugar traded under preferential or other type of trade agreements, the average price has been around 23 cents per pound. In contrast, sugar traded on the world market averaged just 8.7 cents per pound from 1985 to 1990. This price is only a fraction of the production costs of growers in the world's major exporting nations. In 1993, the annual average world market price for raw sugar was about 10.0 cents a pound.

World Sugar Market

The term "world sugar market" is misleading and confusing. People not familiar with the world's sugar industry often believe that the world market represents a competitive market for all sugar sold throughout the world. In fact, the small amount of sugar placed on the world market is surplus sugar; i.e., sugar that cannot be sold through preferential trade agreements or consumed within the country of origin. This excess sugar is placed on the world market for whatever price it can bring, simply to reduce losses.

Raw sugar prices quoted on the New York and London commodity exchanges

SUGAR SUPPLY AND DISTRIBUTION BY COUNTRY FOR 1993/94

(1,000 Metric Tons, Raw Value)

Country	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
NORTH AMERICA				
Canada	120	1,133	1,231	37
Mexico	3,930	100	4,450	13
United States	6,858	1,610	8,301	535
TOTAL	**10,908**	**2,843**	**13,982**	**585**
CARIBBEAN				
Barbados	45	15	15	45
Cuba	4,300	0	750	3,500
Dominican Republic	625	20	305	342
French West Indies	71	9	17	63
Haiti	30	20	55	0
Jamaica	240	50	123	122
Puerto Rico	45	88	133	0
St. Kitts & Nevis	20	0	3	17
Trinidad & Tobago	120	15	62	73
Other	0	23	23	0
TOTAL	**5,496**	**240**	**1,486**	**4,162**
CENTRAL AMERICA				
Belize	105	0	10	95
Costa Rica	325	0	191	131
El Salvador	345	0	200	145
Guatemala	1,147	0	378	770
Honduras	195	29	182	18
Nicaragua	205	10	135	85
Panama	125	0	84	40
TOTAL	**2,447**	**39**	**1,180**	**1,284**
SOUTH AMERICA				
Argentina	1,080	215	1,310	57
Bolivia	270	0	205	70
Brazil	9,900	6	7,600	2,600
Chile	490	29	565	0
Colombia	1,892	0	1,192	670
Ecuador	362	67	375	43
Guyana	262	7	30	240
Paraguay	110	0	108	7
Peru	505	249	700	56
Surinam	1	12	13	0
Uruguay	60	47	100	7
Venezuela	510	270	780	0
TOTAL	**15,442**	**902**	**12,978**	**3,750**
EUROPEAN COMMUNITY (EC)				
Belgium/Luxembourg	1,134	255	517	835
Denmark	566	21	296	278
France	4,772	360	2,176	2,968
Germany[a]	4,750	153	2,973	1,927
Greece	334	5	340	10
Ireland	192	8	170	46
Italy	1,543	175	1,790	140
Netherlands	1,228	121	861	548
Portugal	4	308	319	0
Spain	1,343	150	1,225	150
United Kingdom	1,561	1,354	2,529	362
TOTAL[b]	**17,427**	**2,910**	**13,196**	**7,264**
OTHER WESTERN EUROPE				
Austria	519	0	429	76
Finland	154	105	241	30
Norway	0	170	170	0
Sweden	394	3	360	15

SUGAR SUPPLY AND DISTRIBUTION — *Continued*

(1,000 Metric Tons, Raw Value)

Country	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
Switzerland	150	138	293	0
Other	0	32	32	0
TOTAL	**1,217**	**448**	**1,525**	**121**
EASTERN EUROPE				
Albania	10	40	50	0
Bulgaria	9	222	170	41
Czech Republic & Slovakia	780	30	790	0
Hungary	260	120	365	30
Poland	2,270	0	1,600	550
Romania	135	400	532	3
Yugoslavia (former)	200	280	490	10
TOTAL	**3,664**	**1,092**	**3,997**	**634**
FORMER SOVIET UNION & BALTIC STATES				
Baltic States	110	168	275	0
Belarus	130	280	420	0
Kazakhstan	107	500	550	0
Russian Federation	2,470	3,595	6,100	80
Ukraine	4,150	200	2,300	2,100
Uzbekistan	0	450	450	0
Other	220	752	970	0
TOTAL	**7,187**	**5,945**	**11,065**	**2,180**
NORTH AFRICA				
Algeria	10	990	910	100
Egypt	1,050	550	1,600	0
Libya	0	205	205	0
Morocco	495	354	860	0
Sudan	550	0	455	85
Tunisia	40	195	235	0
TOTAL	**2,145**	**2,294**	**4,265**	**185**
SUB-SAHARAN AFRICA				
Cote d'Ivoire	170	10	165	20
Ethiopia	200	0	150	50
Kenya	382	70	452	0
Malawi	200	0	150	46
Mauritius	604	0	42	590
Nigeria	50	510	470	30
Reunion	191	0	16	173
South Africa	1,244	118	1,410	27
Swaziland	482	7	126	395
Tanzania	137	46	170	13
Zaire	60	55	115	0
Zimbabwe	54	185	238	35
Other	652	838	1,421	75
TOTAL	**4,426**	**1,839**	**4,925**	**1,454**
MIDDLE EAST				
Cyprus	0	23	23	0
Iran	900	950	1,850	0
Iraq	12	598	600	0
Israel	0	300	302	0
Jordan	0	180	180	0
Lebanon	15	102	115	0
Persian Gulf States	0	369	369	0
Saudi Arabia	0	485	485	0
Syria	110	368	475	0
Turkey	2,250	4	1,920	500
Yemen	0	342	342	0
TOTAL	**3,287**	**3,721**	**6,661**	**500**

SUGAR SUPPLY AND DISTRIBUTION — *Continued*

(1,000 Metric Tons, Raw Value)

Country	SUPPLY		DISTRIBUTION	
	Production	Imports	Consumption	Exports
ASIA				
Bangladesh	220	60	320	0
China	7,600	1,025	7,900	700
India	12,350	700	14,085	50
Indonesia	2,480	200	2,675	0
Japan	841	1,689	2,519	1
Republic of Korea	0	1,258	987	274
Malaysia	114	920	830	220
Pakistan	3,120	6	2,800	200
Philippines	1,880	5	1,680	325
Sri Lanka	60	395	450	0
Taiwan	477	100	530	12
Thailand	4,000	0	1,350	2,800
Vietnam	430	100	550	0
Other	85	795	810	70
TOTAL	**33,657**	**7,253**	**37,486**	**4,652**
OCEANIA				
Australia	4,460	7	960	3,487
Fiji	458	0	41	417
New Zealand	0	169	166	3
Papua New Guinea	32	0	34	4
Other	0	14	14	0
TOTAL	**4,950**	**190**	**1,215**	**3,911**
WORLD TOTAL[c]	**112,253**	**29,748**	**114,927**	**29,748**

Source: USDA Sugar: World Markets and Trade, June 1993.

[a]Unified Germany.

[b]Includes intra-EC trade not included in world totals.

[c]Includes unrecorded data to balance imports and exports.

are sold F.O.B. Caribbean, which does not include shipping and insurance costs or entry duties and fees. These prices also do not reflect the refining and distribution costs to deliver refined sugar to the end user.

Thus, "world dump sugar market" or "world residual sugar market" would be more accurate names for the so-called world sugar market. The chief characteristic of the world market is price volatility, and its chief purpose is to serve as the world's sugar reserve stockpile.

World Sugar Surplus

World sugar production has risen substantially in recent years, in part because of population growth and increasing demand for sugar in developing countries. It is also in part because of world shortages—one in 1974-75 and one in 1980-81—that raised prices to levels that stimulated additional production in many nations.

As a result, world production has exceeded demand, and the world sugar stockpile has equaled as much as 31 percent of total consumption as in 1982/83. Since the mid-1980s, however, growing population and rising consumption have resulted in declining levels in the world stockpile to about 21 percent in 1992/93.

A significant contributor to the price-depressing excess world supply of sugar in recent years has been the European Community (EC), which until the mid-1970s

in recent years has been the European Community (EC), which until the mid-1970s was a net sugar importer. Sugar production within the EC has been encouraged by its Common Agricultural Policy (CAP), which provides price supports, import controls, and export subsidies. Currently, the EC is the world's largest sugar producer and second largest exporter. Also benefiting from the CAP are sugar producers in Lome Convention countries because Lome sugar is imported and paid for at prices related to internal EC prices. Reform of the CAP thus far has been successfully resisted by EC farm blocs.

The EC is but one example of political trade decisions that spur excess sugar production around the world. In Thailand, domestic prices, production, and revenue sharing between producers and millers is controlled. In Australia, protection includes a central marketing system and production control. In Japan, levies on sugar imports are used to subsidize high-cost domestic producers.

Because of the extent and variety of sugar support programs and because of the relatively small amount of sugar traded on the world residual market, no substantial changes in production and consumption accompanied by improvement in world prices that reflect actual production costs are likely in the short term.

Impending changes in the world's major international trade agreement have the potential for influencing the world sugar trade. The trade pact is the General Agreement on Tariffs and Trade.

General Agreement on Tariffs and Trade

The General Agreement on Tariffs and Trade (GATT) offers an avenue for resolving some or all of the problems of the international sugar trade. In September 1986, nations signatory to the GATT meeting at Punta del Este, Uruguay, agreed to include agricultural trade policies, including those for sugar, in the review of the trade treaty. This was the first time that agricultural issues were put on trade-talk agendas by the 96-nation organization. (Because of the location of this meeting, the continuing trade talks have become known as the "Uruguay Round" of trade talks.)

During the mid-term review talks held in Montreal, Canada, in December 1988 and in April 1989 in Geneva, Switzerland, it was clear that agreement on agricultural trade issues would be difficult to achieve. The major barrier to agreement that received wide public attention was resolving the hard positions taken by the U.S. and the European Community. The U.S. went into the negotiations committed to removing all agricultural commodity support programs by the year 2000; the EC sought reductions in some support programs but resisted the complete abolition of them.

Since then, little progress has been made on resolving the issues facing the involved nations, and a new world trade agreement was not reached in December 1990 when the trade talks were to conclude.

U.S. sugar industry leaders, convinced that their industry can compete successfully in a free world market for sugar, supported

the original U.S. position in the GATT negotiations. However, as the negotiations proceeded the Administration shifted its position from elimination of all trade barriers to only a percentage reduction in them.

A percentage reduction of trade barriers would put the entire U.S. sugar industry at risk. Because the current support level of the U.S. sugar program is below average domestic producer costs, a percentage reduction would worsen domestic producers' disadvantage relative to more heavily supported foreign producers. Support for U.S. producers would drop further below production costs while supports for the European Community producers, for example, would remain well above their production costs. With an unfair advantage like this, foreign producers would drive U.S. producers out of business.

Because the U.S. negotiating position would have put U.S. sugar producers at great risk, the domestic sugar industry in 1990 withdrew its support of the Administration's proposal in GATT.

In spring 1991, U.S. sugar producers joined with other commodity groups to urge Congress to deny the Administration's request to extend fast-track authority in the GATT negotiations. This authority would require Congress to vote on any trade agreement reached under GATT without any opportunity to amend it. However, in May 1991, Congress failed to reject the fast-track authority, and it was extended to June 1993.

In an attempt to overcome differences over trade issues, especially in agriculture, and move the trade negotiations toward an agreement, Arthur Dunkel, director of the GATT, offered a compromise text on a take-it-or-leave-it basis in December 1991. Among the provisions, the Dunkel text proposed a 20 percent reduction in internal supports, 36 percent increase in market access, a 36 percent reduction in export subsidies by value and a 24 percent reduction in the volume of subsidized exports.

The Dunkel proposal did not result in overcoming differences in positions, especially between the U.S. and the European Community. This was followed by another year of little progress. The year 1992 ended in an attempt to get the GATT negotiations moving toward a successful conclusion with EC and U.S. negotiators meeting in Washington, D.C. in December. Changes to the Dunkel text were hammered out and a revised proposal developed that became known as the Blair House Accord. The revisions, aimed at convincing the EC to reach acceptance of the GATT, included decreasing the percentage reduction in the volume of subsidized exports from 24 to 21 percent, while the 20 percent reduction in internal supports was modified from an across-the-board reduction to an average reduction of these supports.

With the lack of progress continuing into 1993, the Clinton administration in the spring requested Congress to extend the GATT fast-track legislation to December 15, 1993 to provide additional time for completing the Uruguay Round.

Much of the difficulty in reaching an agreement remained, in part, on the continued

unwillingness of France, in particular, to agree to the farm trade barrier reductions in the Blair House Accord.

However, a GATT agreement was finally reached on December 15, 1993, in Geneva, Switzerland, by 117 countries participating in the negotiations. The agreement was formally signed by the participating countries on April 15, 1994 in Morocco. One of the major changes made by this agreement was the formation of the World Trade Organization which will administer and enforce the GATT agreement.

While there were no significant reductions in the differentials in the internal and external supports for sugar between the U.S. and other treaty participants, especially the European Union, the agreement assures U.S. sugar producers that they will not have to endure unfair competition from subsidized competitors for the next six years.